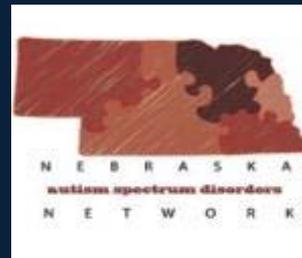


# TRI-STATE WEBINAR SERIES

## Early Identification of Autism Spectrum Disorder (ASD) in Girls

Presented by:  
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# Tri-State Autism Spectrum Disorder Webinar Series



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# Presenter Information



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# Learner Objectives

Identify key markers of ASD in young children – both male and female

Summarize what's known about different symptom patterns in boys and girls during the toddler and early childhood periods

Identify 3 strategies for improving assessment practices when evaluating young girls

# Presentation Summary

1. There is substantial research to draw from regarding early signs of ASD, particularly in boys.
2. Some of the behavioral markers of ASD that we are trained to look for in young children may not be apparent in young girls who later receive a diagnosis of ASD.
3. We need to consider a broader set of markers when evaluating a young girl for possible ASD.

# Educational Identification of ASD: Definition for Eligibility

“A child with an **Autism Spectrum Disorder (ASD)** is a child with a **developmental disability** significantly affecting **verbal and non-verbal social communication** and **social interaction**, generally evidenced **by the age of three**.

Other characteristics often associated with ASD are:  
engagement in **repetitive activities**  
and **stereotyped movements**,  
**resistance to environmental changes**  
or **changes in daily routines**, and  
**unusual responses to**  
**sensory experiences.**”



## Educational Identification of ASD: Definition (cont.)

“The Autism Spectrum Disorder prevents the child from receiving reasonable educational benefit from general education as evidenced by **at least one characteristic in each of the following three areas:**

(1) The child displays **significant difficulties or differences or both in interacting with or understanding people and events...**

(2) The child displays **significant difficulties or differences, which extend beyond speech and language to other aspects of social communication, both receptively and expressively.**

(3) The child seeks consistency in environmental events to the point of exhibiting **significant rigidity in routines** and **displays marked distress over changes in the routine**, and/or has a **significantly persistent preoccupation** with or attachment to objects or topics.”

# Today's Webinar

- Review of research on:
  - Sex differences in ASD Identification
  - Early markers of ASD
  - What's known about different symptom profiles in females and males across development
- Discuss 9 implications for practice when evaluating a young girl for possible ASD

# Sex Differences in ASD Identification

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# Sex Differences in ASD Identification

- We identify boys 4 X more often than girls (Baio, 2012 & ADDM Network Based on 2008 data)
- Prevalence estimates from surveillance study (CDC, 2014 & ADDM Network based on 2010 data)
  - 1 in 42 males
  - 1 in 189 females





Girls are usually identified later than boys

Girls with relatively higher cognitive functioning are most likely to be missed when evaluated in early childhood

(Giarelli et al., 2010, Rutherford et al., 2017; Shattuck et al., 2009)

# Early Markers of ASD

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# Markers of ASD in 1<sup>st</sup> Year of Life

- Developmental delays in sensorimotor functioning (Estes et al., 2015)
- Reduced gaze fixation at 6 months (Chawarska et al., 2013)
- Limited range of intonation in vocalizations/babbling (Paul et al., 2011)



# Markers of ASD in 2<sup>nd</sup> Year of Life

- Developmental delays in social-communication
- Significant delays in receptive language and fine motor skills, relative to nonverbal cognition
- Atypical eye contact
- Poor visual tracking
- Difficulty disengaging attention
- Inconsistent response to name



# Markers of ASD in 2<sup>nd</sup> Year of Life (cont.)

Less looking at caregivers' faces (Jones, Carr & Klin, 2008)

Less monitoring of another's gaze (Bedford et al., 2012)

Less social imitation (Rogers et al., 2003)

Less shared affect (Lord et al., 1998)

Less frequent  
joint attention  
behaviors (Stone et al., 1998)



What do we know about different symptom patterns in females and males across development?

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# Research On Sex Differences in ASD Symptoms

- Research reports contradictory findings, depending on sample characteristics & methods:
  - Inclusion/Exclusion Criteria – age ranges, genetic conditions,
  - How they are recruited – clinical, prospective/high risk or epidemiological
  - Whether or not cognitive/developmental level is considered



# Research On Sex Differences in ASD Symptoms

*Developmentally sensitive –*

Studies that examine a narrow developmental period are more likely to find differences

Girls present differently as a function of overall developmental level/cognitive functioning – as a field we are poorest at identifying girls with average or above IQs

In general, *studies of young children suggest more differences in symptoms than studies of older children*; however some of these differences are subtle

# Sex Differences During Infancy: Results from a Prospective Baby Sibling Study (Chawarska et al., 2016)

- Between 6-12 months of age, girls at high risk of ASD showed **enhanced attention** to social targets (e.g., faces)
  - More than high or low risk boys
  - Even more than compared to girls at low risk of ASD

Perhaps girls at risk for ASD have trouble shifting away from social information -→ so, they learn more core relatedness skills at young ages, but then show increased co-occurrence of social anxiety in later years due to hypervigilance

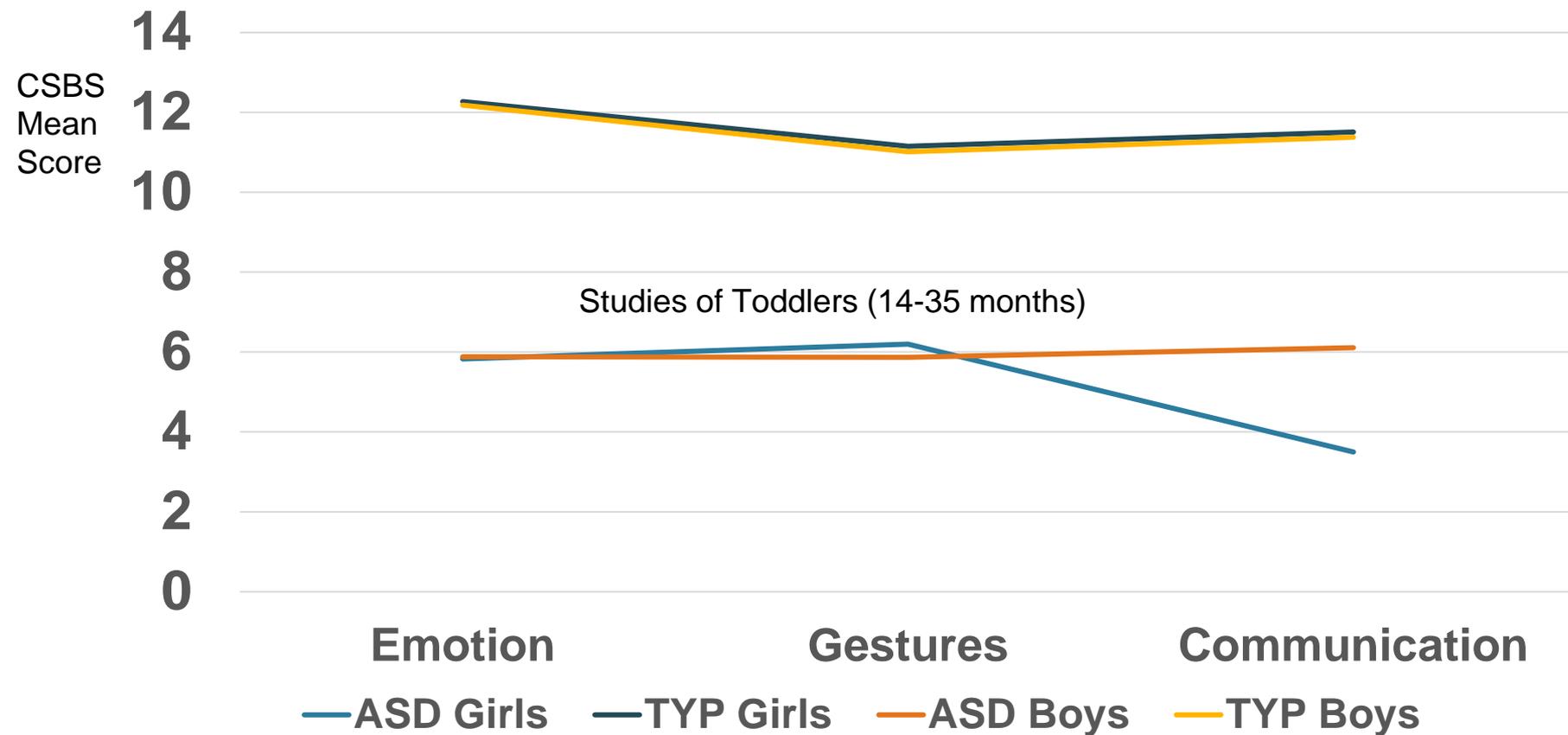
# Studies of Toddlers (14-35 months)

## Carter et al. (2007):

- No differences in parent report of ASD symptoms via ADI-R
- Girls showed **more impairments on Communication** domain of the ADOS than boys
- Some evidence for **more significant impairment in empathy** and a **tendency to withdrawal** in girls
- Differences in cognitive profile on standardized developmental testing (MSEL):
  - Girls achieved higher scores on Visual Reception (nonverbal problem-solving)....and **larger discrepancies within profile**
  - Boys achieved higher scores in Gross & Fine Motor, Expressive Language
    - Replicated findings using a different test (Mateis et al., 2019)

## Studies of Toddlers (cont.):

### Comparing Social-Communication Skills at 20 months: ASD vs. TYP by Sex



## Studies of Toddlers (cont.)

2-year old girls with ASD show fewer repetitive behaviors than male counterparts (Hartley & Sikora, 2009; Lord et al., 1982; Sipes et al., 2011)

Specifically:

less spinning  
less overattachment to objects  
less abnormal body use



## Studies of Toddlers (cont.)

Relative to young boys, young girls with ASD show **more significant difficulties** in

sharing affect

regulating intense emotions

showing empathy

(Carter et al., 2007; Lawson et al., 2018)



# Study of Toddlers Stratified by Cognitive Functioning (Matheis, et al., 2019)

- **2-year old girls with ASD without a cognitive delay** showed **more** over-reactions to sounds, more clumsiness, and more problems with personal space than males with ASD without a cognitive delay and **fewer problems** with imitation, preoccupation with parts, abnormal visual fascinations
- **2-year old girls with ASD and cognitive delays** showed **more problems** with appropriate gesture use, a limited range of facial expressions, and a lack of exploration of toys than boys with ASD with a cognitive delay and **fewer problems** with attempting to communicate, and interacting for purely social purposes

# Studies of 3-5 year olds

- Girls show higher Vineland scores in socialization and daily living skills than boys (Zwaigenbaum et al., 2012)

Other studies tell us that these relative strengths disappear over time (Tomaszewski et al., 2018)



## Sex differences in School-aged Youth and Teens with ASD

- Girls tend to show **less severe repetitive behaviors** and restricted interests than boys. (Frazier et al., 2014; Nicholas et al., 2008; Zwaigenbaum et al., 2012)
- Girls are at **increased risk of developing co-occurring anxiety and depressive disorders** than boys (Holtman, et al., 2007; Solomon et al., 20012)
- Girls tend to show **fewer disruptive behavior problems** at home and at school (Dworzynski et al., 2012; Mandy et al., 2012)
- By the age of 9, girls tend to show more significant **social-communication impairment, lower cognitive ability and adaptive functioning** than boys (Frazier et al., 2015)

## What do we know about sex differences in school-aged youth and teens? (cont.)

- Girls with **intact cognitive ability tend to compensate** in ways that can mask their impairments (Dean et al., 2017)
- However, **masking has long-term adverse consequences** on mental health, social isolation & self-efficacy (Aggarwal & Angus, 2015; Lehnhardt et al., 2016)
- When adolescent girls/women are referred for evaluations (where they eventually receive a diagnosis of ASD), they often are **initially referred by their parents for emotional regulation problems**, not ASD symptoms (Duvekot et al., 2017; Oien et al., 2018)

# 9 Implications for Practice

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# Let's consider that there may be a “female protective factor” at play

In studies of sex differences in typically developing young children

Girls tend to show:

- better social orienting
- increased sensitivity to facial expressions
- richer social reciprocity
- better integration of eye contact
- better language skills
- more consistent empathic responses
- earlier acquisition of perspective taking skills



(Bouchard et al., 2009; Connellan et al., 2000; McClure et al., 2000; Montagne et al., 2005; Reilly et al., 2009; Zambrana et al., 2012)

## If so, this protective factor probably impacts symptom presentation in girls differently as a function of cognitive functioning

For girls with average to above average IQ:

- Masks underlying impairments until social demands get more complex (i.e., 2<sup>nd</sup>-3<sup>rd</sup> grade)
- Confuses and frustrates adults who encounter unexpected gaps in development and different behaviors in different contexts, making it hard to know how to calibrate one's expectations.

For girls with an intellectual disability:

- Accentuates the delays, resulting in more severe symptoms and increasing likelihood of identification

# Therefore, Implication #1:

**Assess cognitive/developmental functioning** through

- Standardized testing
- Adaptive Behavior interviews/checklists
- **Interpret symptoms within this developmental context**
- Look for inconsistencies across domains

Remember that young, intellectually capable girls may show intact social responsiveness and relatively stronger simple social and communication behaviors; however, as social context becomes more complex, impairments are more evident

- Social competence isn't well developed, but it "looks better" on the surface in many bright young girls

## Implication #2. Assess emotional regulation skills

Emotional differences may be more noticeable in young girls than social differences

Assess at home and at school (be ready for different behaviors in different settings)

Examine emotional intensity, reactivity, getting “stuck” emotionally, black-and-white thinking about feelings, misinterpreting of other people’s feelings, inappropriate emotional contagion, appropriateness of affect to context, range of affect, range of strategies/ways child self-soothes

## Implication #3: Assess motor functioning, eating, sleeping & toileting

- Look for neurological soft signs (e.g., toe-walking)
- Evaluate
  - Gross & fine motor functioning
  - Coordination & motor planning
  - Perception of body in space
- Ask family about
  - Sleep
  - Eating
  - Exercise/movement opportunities
  - Toileting
  - Self-harm (e.g., skin-picking more common in girls)

## Implication #4: Investigate strengths, interests and motivators

- Females with ASD report significant self-esteem issues as they grow older
- Ongoing assessment and programming that builds on a child's strengths and incorporates her interests will promote resilience
- Identification of motivators that can be employed to encourage initiation, persistence and engagement will be helpful at school and at home

## Implication #5. Use ASD Symptom Tools that provide separate norms for males/females

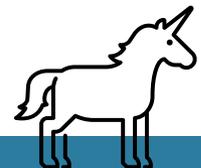
For example: Social Reciprocity Scale-2  
(Constantino et al., 2007)



# Implication #6: Don't expect as many obvious repetitive behaviors and unusual interests in young girls

Instead, ask about:

- unusual sensory experiences (over- and under- sensitivity)
- unusual fears
- fixations on one specific child or adult
- tendency to identify with animals – may even behave like an animal (e.g., cat) under stress and not recognize the time/place for imaginary play
- Tendency for magical thinking and imaginary friends to persist longer than expected
- As she gets older, you may see special interests emerge, but they are likely to be topics other girls like, she may just focus more of her attention on them (e.g., unicorns)



## Implication #7: Observe the child in unprompted play, ideally with other children

- Investigate the complexity of the child's play – both independently and with a peer. May see limitations in child's ability to
  - Generate her own ideas about how to play
  - Initiate a variety of independent multi-step play activities
  - Build on a play scheme
- Find out if the child tends to follow others at play – some young girls figure out that if you “go along” and do what others are doing; it works well enough and adults may not notice that the child actually doesn't play particularly well

## Implication #8: Don't be fooled by demonstration of some intact social skills with a responsive adult

- For example, high-functioning girls may not be as likely to be picked up by the ADOS at young ages
- Observe the child in unstructured situations and look for qualitative differences in social interactions with peers
- Try to find out what social behaviors were actively taught and which ones came on naturally

## Implication #9: Always be willing to revisit the ASD question later in development

- If you do not observe or hear reports of sufficient ASD symptoms in early childhood, but the girl is showing some concerning behaviors:
  - Provide supports where needed
    - Social
    - Communication
    - Emotional regulation
    - Adaptive skills
  - Document your qualitative concerns and indicate need to consider a re-evaluation in early elementary school
  - Monitor for social vulnerability/overly trusting or naïve interpretations of others' intentions as she gets older

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**Thank you for your time and attention**

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